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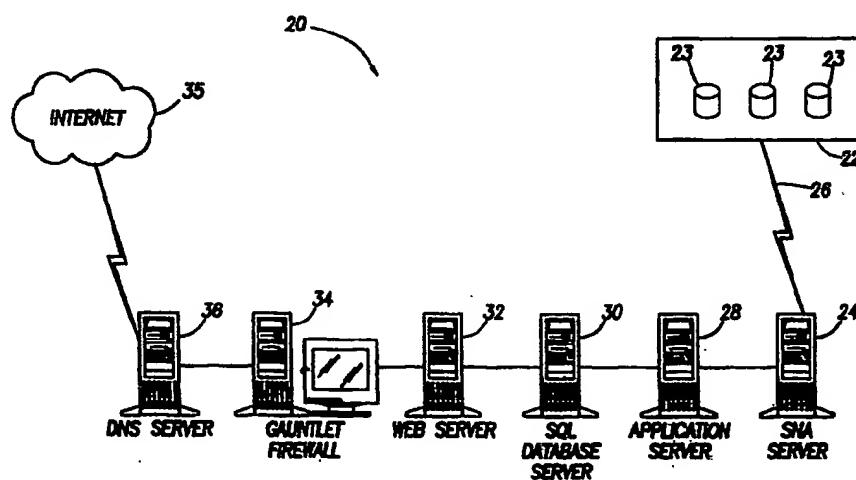


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(57) Abstract

A communications network (10) is provided that allows for secure, dynamic communication between business nodes of the network. The business nodes of the network are coupled over the global Internet (35). The users at the business nodes are able to transmit and receive data to and receive data from a central web server (32). The web server (32) accesses data stored in a legacy mainframe database (22) and populates the data fields of web page templates with the stored data. The user of the communications network is able to access customer-specific information over dynamically updated web pages. The web server includes a firewall for preventing unauthorized access to the data maintained in the network (10).

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**VIRTUAL PRIVATE COMMUNICATIONS NETWORK AND METHOD FOR
SECURE BUSINESS TO BUSINESS COMMUNICATION**

BACKGROUND OF THE INVENTION

5 Although the communications needs of a modern corporation may vary widely, all corporations value communications networks in which communication between the business nodes of the corporation is accomplished inexpensively and securely. The need for inexpensive and secure communications networks is heightened for those companies having numerous geographically separated offices or divisions that must be in frequent communication with one or more central operating facilities. One example of a business industry requiring an inexpensive and secure communications networks is the direct broadcast satellite industry. In the direct broadcast satellite industry, a central communications facility may have to be in near-constant communication with the numerous operating entities that make up the direct broadcast satellite provider's sales channels.

10 In the case of a direct broadcast satellite provider, a distribution channel is the channel through which satellite broadcast services are sold to consumers. The distribution channel of a direct broadcast satellite provider may also comprise the channel through which maintenance services are provided to customers. As an example, the distribution channel for a direct broadcast satellite provider may include nationwide retail outlets at which sales professionals attempt to market the provider's satellite broadcasting services to the store's consumers. The distribution network may also include direct sales

agents that work in the field and make direct sales calls in an attempt to market the provider's satellite services.

In addition to retail outlets and direct sales agents, the distribution channel may also include a network of master agents and subagents. The role of the master agent is to be responsible for the operation and management of the subagents. Each master agent is responsible for dozens of subagents. There are often many more subagents than master agents, each subagent being assigned to a single master agent. A subagent is often a local retail outlet that may market satellite broadcast services, in addition to other services. The subagent differs from the nationwide retail outlet discussed above in that each subagent is often a local retail outlet and not a nationwide chain of retail stores. In addition to marketing the satellite broadcasting service, the subagents also arrange to solve the maintenance problems of customers who have previously purchased the satellite broadcasting service. As part of their responsibilities, master agents report to the corporate headquarters on the operation of the subagents.

Establishing a secure and inexpensive communications channel between the corporate headquarters and the master agents and subagents is an important aspect of the satellite broadcast provider's ability to sell its services to new subscribers and manage its existing subscribers. Known communications networks for communicating between the corporate headquarters, master agents, and subagents may have involved the use of a variation of a dial-up telephone network in which telephone operators located at the site of the master agent or the corporate headquarters record the activity of the subagents or master agents. Other prior networks for providing such communications may have involved the

use of leased T1 or other high-speed telephone lines for establishing a connection between the corporate headquarters, master agents, and subagents. These alternatives have disadvantages, however. The use of a dial-up telephone network may involve significant human interaction, necessarily raising the operating expenses of the network. Similarly, 5 leased T1 lines are expensive and may require the establishment of a dedicated electronic network at the corporate headquarters.

Further, establishing a secure, inexpensive, and versatile communications link between a satellite broadcast provider's direct sales agents and its central facility, where its call center may be located, is a necessary component for establishing an efficient 10 sales force automation program. Sales force automation generically describes the method by which direct salespeople are quickly and efficiently transferred customer inquiries for further processing. To best complete a sale, it is often useful to have the direct sales agent contact the customer within twenty-four hours of the customer making contact with the direct broadcast provider's call center. Further, once the direct sales agent is able to reach 15 the customer, it is desirable that the direct sales agent be able to place and confirm the customer's order with the direct broadcast provider's central facility before leaving the customer's premises. Known sales force automation techniques often involve dedicated electronic networks or require that the customer communicate further with the call center or central facility after having been contacted directly by the direct sales agent.

20 SUMMARY OF THE INVENTION

The communications network of the present invention provides for secure, dynamic, versatile communication between a plurality of business nodes. The users at the

business nodes transmit requests for data to a central web server. The web server accesses data stored in a legacy mainframe database and populates the data fields of web page templates with the stored data. In this manner, the user of the communications network is able to access customer-specific information over dynamically updated web pages. The web server includes a firewall for preventing unauthorized access to the data maintained in the network.

The data stored in the legacy mainframe database is transferred to the data fields of the web pages by initiating an access of the data by a mainframe database computer terminal running an emulator program. After this data has been accessed by the emulator terminal, an application server screen scrapes the data to a database server. From the database server, the web server retrieves the data and places the data in the data fields of the web pages to be displayed to the user. If data is to be transmitted from a user to the mainframe database, the user first enters the data to be stored in the mainframe database in the data fields of a web page displayed by the web server. The web server transfers this data to the database server. The application server takes the data from the web server and performs a screen paste application to the emulator terminal, which subsequently applies the data to the mainframe database.

Therefore, it is an object of the present invention to provide a communications network that provides for secure, low-cost access to dynamically changing data by use of dynamically changing web pages accessed over the global Internet. To the user, the communications network of the present invention resembles a private, virtual network. Although the user is aware that the global Internet is used as the communications

medium, communication over the network is secure and is accomplished without extensive investment into the infrastructure of a dedicated electronic communications network. It is a further object of the invention to provide a means for formatting and transmitting data to and from the data fields of the web pages of the present invention and the legacy
5 mainframes used to store data for use in the system.

DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and advantages thereof, reference is now made to the following description taken in conjunction with the accompanying drawings, in which like reference numbers indicate like features and
10 wherein:

Figure 1 is a diagram of an embodiment of the communications network of the present invention, including a depiction of the master agent/subagent hierarchy.

Figure 2 is a diagram of the hardware architecture of the communications network of the present invention;

15 Figures 3a and 3b are flow charts of data access for display in the communications network of Figure 1;

Figures 4a-4d are diagrams of a web page containing customer information displayed by the communications network of the present invention;

20 Figure 5a is a flow chart of the handling of trouble calls by the communications network of the present invention;

Figure 6 is a diagram of a web page depicting trouble call information displayed by the communications network of Figure 1;

Figure 7 is a diagram of an embodiment of the communications network of the present invention, including a depiction of the area sales manager/direct sales agent hierarchy;

Figure 8 is a diagram of a web page depicting sales lead information for prospective customers of the direct satellite provider;

Figure 9 is a diagram of a web page depicting detailed information for a prospective customer of the direct satellite provider; and

Figure 10 is a flow chart of the flow of data in the communications network of the present invention upon the request by a direct sales agent of a customer activation screen.

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 is a depiction of the reporting hierarchy of one embodiment of the communications network of the present invention. The communications network of the present invention is indicated generally at 10. The reporting hierarchy of the master agent/subagent sales distribution channel is shown in Figure 1. A distribution channel is the means by which products, in this case satellite programming services, are sold to customers. The communications network 10 includes a corporate headquarters 12. Reporting to corporate headquarters 12 are a plurality of master agents 14, and reporting to each of master agents 14 are a plurality of subagents 16. The communications network 10 of the present invention provides a communications link between the corporate headquarters 12, master agents 14, and subagents 16, each of which comprise the business nodes of communications network 10. In the depiction of communications network 10 of

Figure 1, four master agents 14 and eight subagents 16 are shown, there being two subagents 16 per master agent 14. There may, however, be more or fewer master agents or subagents at particular locations in the network depending on the particular configuration of the network, which may be adjusted to accommodate business demands. There may be
5 more or fewer subagents per master agents depending on the business needs of the sales distribution channel. It is anticipated, for instance, that there may be 50 to 500 subagents per master agent, and four or more master agents, depending on the size of the sales distribution channel.

A communications link 18 is provided between each of the corporate
10 headquarters 12, master agents 14, and subagents 16. The communications link 18 of the invention is an Internet communications link. The technical advantage provided by the Internet communications link 18 is the provision of a secure, inexpensive communication link between each of the business nodes in network 10. In some cases, communications link 18 will comprise a dedicated telephone line but may also comprise a wireless
15 connection, where applicable. To access the communications network 10, each user of the network 10, whether a master agent 14, a subagent 16, or a user in the corporate headquarters 18, must have access to a digital computer for accessing the Internet. The digital computer may comprise any variation of personal computer, including traditional desktop computers, portable computers, palm top personal computing devices, or any other
20 device able to access the global Internet. In addition, each user must have standard Internet access software and a means of reaching the Internet through an Internet access provider such as America Online (AOL), for example.

Shown in Figure 2 is a diagram of the hardware architecture 20 of communications network 10. The customer data of the satellite broadcast provider is maintained on one or more mainframe databases indicated at 22. The customer data may comprise, for example, the personal data of the customer (account number, name, address, telephone number, etc.) and the customer's account history (first service date, service history, programming choices, programming history, etc.). Mainframe database 22 may store the customer data on one or more data storage devices. Mainframe database 22 and its associates storage devices comprise a so-called legacy network. Legacy networks or legacy systems are those systems that use an embedded technology platform that is not compatible with the technology and standards of existing data networks. Legacy systems are often still a component of modern data processing and communications networks because of their large embedded base of stored data. To accommodate legacy mainframe database 22, hardware architecture 20 includes a System Network Architecture (SNA) server 24, which permits a standard microcomputer to run an emulator application program to retrieve data from and apply data to the mainframe database 22. SNA server 24 is coupled to mainframe databases 22 over a suitable communications line 26, which may comprise a T1 line or another communications link having an adequate communications bandwidth.

The mainframe emulator application program running on SNA server 24 allows a standard microcomputer (not shown) to act as a mainframe terminal computer for mainframe database 22. Coupled to SNA server 24 is an application server 28. A software application, Amazon, a product of Intelligent Environments of Burlington, Massachusetts

on application server 28. Amazon performs a figurative screen scraping and screen pasting function in conjunction with data to be retrieved from or applied to mainframe database 22. A screen scraping function occurs when a software application retrieves data that has been retrieved from a mainframe database by a mainframe computer terminal. A screen pasting
5 function occurs when a software application applies data to a mainframe computer terminal to be applied to a mainframe database. As an example, when data is to be retrieved from mainframe database 22, SNA server 24, running an emulator application program, issues a command to mainframe database 22 to retrieve the requested data. Once the data is retrieved by SNA server 24, Amazon, running on application server 28, scrapes the data
10 fields of the mainframe emulator running on SNA server 24. If data is to be applied to mainframe database 22, the process is reversed. Amazon, running on application server 28, pastes data to the data fields of the mainframe emulator running on SNA server 24. Data retrieved from mainframe database 22 by SNA server 24 and application server 28 is stored in an SQL database server 30. Coupled to SQL database server 30 is web server 32.

15 As described, the business nodes of communications network 10 are coupled to one another by Internet communications links. The global Internet is indicated generally in Figure 2 at reference numeral 35. The communications network of the present invention includes a web site. The web site includes a number of individual, linked web pages. The screen templates for the Internet web pages of the web site reside on web server 32. Also
20 residing on web server 32 is the software application Cold Fusion, a product of Allaire of Cambridge, Massachusetts. Cold Fusion populates the data fields of the web sites of communications network 10 by retrieving data stored in SQL database server 30 and

placing that data in the appropriate data fields in web screen templates stored on web server 32.

Coupled to web server 32 is firewall server 34. Firewall server 34 acts as a security device and prevents unauthorized access to the communications network 10 and web server 32 by unauthorized web surfers. Coupled to firewall server 34 is domain name service (DNS) server 36, which routes Internet users entering an appropriate IP address to the home page of the web site of communications network 10. DNS server 36 is coupled to the Internet and defines the web site of the satellite broadcast provider to the Internet.

When a master agent 14 or subagent 16 desires to transmit or receive information by means of the communications network 10 of the present invention, the user first starts his or her personal computer, initiates the Internet browser application residing on his or her personal computer, and logs on with his or her Internet service provider. The user next locates the home page of the web site of communications network 10. Upon receiving a request from the user's browser to access the IP address of the web site for the communications network 10, DNS server 36 routes the user to firewall server 34. Firewall server 34 displays a web page log on screen that prompts the user to enter his user name and password. Upon verifying the user name and password, the user is allowed to enter the site. The access control provided by the firewall server 34 allows only authorized users to access the web site of communications network 10, preventing unauthorized users from accessing the sensitive customer and product information stored in SQL database server 30 and mainframe database 22. With reference to Figures 3a and 3b, after the user enters his name and password at step 302, firewall server 34 determines whether the use is granted access

to the web site (step 304). If the user is not granted access to the site, communications network 10 rejects the attempt by the user to access the web site (step 306). If the user is granted access to the site, control is passed to web server 32.

If it is determined that a user is allowed access to the web site of communications network 10, the user may request that certain data or information be passed to the user over communications network 10 (step 308). For example, a subagent may request the account history of a particular customer. At step 310, after the user has issued an information request, web server 32 next identifies the scope of the user's access privileges. A user's access privileges govern the range of information that the user may access over communications network 10, and the information updates that the user is allowed to enter over communications network 10. Generally speaking, a corporate user at corporate headquarters 12 will have greater access privileges than will a master agent 14, and a master agent 14 will have greater access privileges than does a subagent 16. A corporate user will be able to access information concerning each master agent 14 and subagent 16 in the sales distribution channel. A master agent 14 will be able to access data and information concerning its own operations as well as those of subagents 16 under the supervision of master agent 14. A subagent 15, in contrast, will generally only be able to access data and information for its own operations. For example, while a master agent 14 may access data and information concerning customers being served by each of the subagents 16 under his control, subagent 16 can only access data and information regarding his own customers, and not those of other subagents 16. If the user's request is not within the user's access privileges, the request is rejected (step 312).

If a user's request is within his access privileges, processing continues in step 314 in which web server 32 determines the appropriate web page for displaying the data to be retrieved to satisfy the user's request. The web pages of the web site of the communication network are a series of templates, each having empty data fields. A sample web page of communications network 10 is depicted in Figures 4a-4d. Note that in the sample web page of Figure 4, the data fields are not blank, but rather have already been filled in with data, a process that will be described in more detail below. Figures 4a-4d comprise a single web page. The web page 402 of Figure 4a is an example of a page that is returned to the user upon a user's request to view the history of a particular customer account. The user is able to scroll down the web page with the scroll bar 401 on the right side of web page 402 to view the entire content of web page 402. Web page 402 of Figure 4a, for example, includes customer name field 404, customer account number field 406, monthly account billing field 408, customer billing history field 409 (Figure 4b), account notes field 410 (Figure 4c), work order history field 412 (Figure 4d), and customer equipment field 414. Thus, for a particular customer, a master agent or subagent is able to view the details of a customer's account over a secure, inexpensive Internet communications link. By accessing the communications network 10 over the global Internet, it appears to the user that he or she has accessed a private network, when the user has actually accessed a virtual network maintained over the global Internet.

Returning to the flow chart of Figure 3, in step 316, web server 32 polls SQL database server 30 for the data necessary to populate the web pages to be displayed. SQL database server 30 stores some of the data necessary for populating the fields of some of

the web pages. Generally, however, SQL database server 30 stores data that is not customer-specific, including data concerning the product offerings of the satellite broadcast provider, descriptions of programming tier offerings, and data concerning policies and procedures of the satellite broadcast provider. If the necessary data is located in SQL database server 30, web server 32, using Cold Fusion, populates the fields of the selected web pages 402 with the data stored in SQL database server 30.

For customer-specific data that is not maintained by SQL database server 30, web server 32 initiates a data retrieval operation by SNA server 24. SNA server 24 then retrieves the requested data from mainframe database 22 in step 320. The data retrieved by SNA server 24 from mainframe database 22 is screen scraped from SNA server 24 by application server 28 in step 322. Application server 28 applies the screen scraped data to SQL database server 30 (step 324), where it is retrieved by web server 32, using the Cold Fusion product, and applied to the appropriate fields of web page 402 (step 326).

If the user desires to transmit data over the network, rather than retrieving data from the network, the user first transmits a request to transmit data to web server 32. Web server 32 next determines the appropriate web page for allowing the user to input data to be transmitted to mainframe database 22. After the user has inputted the data into the appropriate fields of the web page, web server 32 transmits this data to SQL database server 30. Application server 28, running Amazon, next performs a screen paste function to SNA server 24, which then applies the data to mainframe database 22.

In this manner, the communications network 10 of the present invention populates and retrieves data from dynamically changing web pages, allowing master agents

14, subagents 16, and corporate users of the network to communicate between themselves via the global Internet. The global Internet provides a communications medium for communications network 10 that to the user resembles a communications network dedicated for use solely by master agents 14, subagents 16, and corporate headquarters of the satellite broadcast provider. Communications network 10 is password secured and allows for access by only those users authorized to use the network. The communications network 10 is also a low cost alternative to more expensive network involving leased communication lines. This combination of attributes results in an Internet communications network that, in effect, is a private virtual network that allows secure, dynamic communication between the business nodes of the satellite broadcast provider.

One application of the private virtual network of the present invention is the handling of service calls received by the corporate headquarters 12, master agents 14, or subagents 16 of the satellite broadcast provider. An important customer service concern of all satellite broadcast providers is the need to quickly respond to customer service calls. The communications network 10 of the present invention is particularly well adapted for handling these so-called trouble calls and providing efficient service to customers. Trouble calls may include such service complaints as poor picture quality, misaligned satellite dishes, equipment upgrade requests, and the like. Shown in Figure 5a is a flow chart of the handling of trouble calls by the communications network 10 of the present invention.

To obtain an update of the trouble calls in his region, a user, whether a master agent 14 or subagent 16, will first log on to the network at step 502 and provide his password to be verified by firewall server 34. At step 504, the user requests the status of

the trouble calls for which his business unit is responsible. In step 506, web server 32 identifies the user's unique identity, including whether the user is a master agent 14, subagent 16, or corporate user. Web server 32 next identifies the web template necessary for displaying trouble call information (step 508). The web template will differ depending on the access privileges of the user. A corporate user will have greater access privileges than a master agent 14, and a master agent 14 will have a greater access privileges to information than will a subagent 16. A corporate user, for example, can request trouble call information for all or some subset of the customers of the satellite broadcasting service. A master agent 14 can request trouble call information for all customers under his indirect supervision, which includes customers serviced by all subagents under his direct supervision. A subagent may request trouble call information only for customers under his supervision.

At step 510, web server 32 signals SNA server 24 to retrieve trouble call data from mainframe database 22. SNA server 24 retrieves the requested data from mainframe database 22. Depending on the request of the user, the SNA server 24 will retrieve data on opened trouble calls and ignore closed trouble calls. Application server 28 next screen scrapes the retrieved data from SNA server 24 and transmits this information to SQL database server 30 (step 514). Web server 32, running Cold Fusion, next populates the web page templates with the retrieved data present in SQL database server 30 (step 516). Shown in Figure 6 is a web page 602 displaying trouble call information for a subagent of communications network 10. Web page 602 is a display of all open trouble

calls for a subagent 16. The fields of web page 602 include a customer account field 604, customer name field 606, and trouble call symptom field 608.

When a user seeks to update a trouble call, such as when a subagent has serviced a customer and wishes to update the status of the trouble call, the communications process is similar. Upon a request to update a trouble call received from a user, web server 32 displays a web page that allows the user to input the update information, including the name and account number of the customer, and a complete written description of the status of the trouble call. Web server 32, using the software application Cold Fusion, uploads the information entered by the user in the data fields of the web site into SQL database server 30. Application server 28 next pastes this data to the screen of SNA server 24, which applies the data to mainframe database 22.

A second application of the private virtual network of the present invention is as a sales force automation tool. Sales force automation is a generic term that describes the method by which direct sales agents are notified of sales leads received at a corporate headquarters. The reporting hierarchy for the sales force automation application of the present invention is similar to that for the master agent/subagent application of the present invention. The reporting hierarchy for the sales force automation application is shown in Figure 7. A corporate headquarters is shown at 12. Reporting to corporate headquarters 12 is a number of area sales managers 704 and reporting to each of the area sales managers is a number of direct sales agents 706. Each of the corporate headquarters 12, area sales managers 704, and direct sales managers 706 communicate with one another through communications links 18, which are Internet communications links. The role of the area

sales managers 704 is to monitor the sales efforts of the direct sales agents 706, much like the role of master agents 14 is to monitor the activity of the subagents 16. The role of the direct sales agent 16 is making direct sales calls to customers who have previously contacted the corporate headquarters 12.

5 Figure 8 depicts a web page of sales leads needing sales agents. The web page 802 of Figure 8 will be accessed by an area sales manager 704. By accessing web page 802, area sales manager 704 can assign each of the sales leads to a direct sales agent 706. The assignment of a particular lead to a direct sales agent 706 will be made on the basis of the availability of the direct sales agent 706, and the geographic location of the sales lead and the direct sales agent 706. Direct sales agent 706 may be divided
10 geographically to avoid overlapping responsibility. Web page 802 includes a Customer Name field 804, a Days Cold field 806, a SALT Disposition field 808, and a Notes field 810. The Days Cold field 806 indicates how many days have lapsed since the customer last contacted corporate headquarters 12. The SALT (Sales and Lead Tracking) Disposition 808
15 field indicates the current status of the sales lead. For example, the notation "Credit Pending" in the SALT Disposition Field 808 indicates that the potential customer's credit check is ongoing. The notation "Call Back" indicates that a direct sales agent 706 should contact the customer by phone or in person.

 Figure 9 depicts a web page 902 that provides detailed information for a
20 single sales lead. Included in web page 902 is the Sales Lead Date field 904, which indicates the date the lead was first received at the corporate headquarters 12, and the date the lead was first made available to the direct sales agents 706. Also included in web page

902 is Customer Information field 906 and SALT Disposition field 908. Salt Disposition Field 908 includes a pull-down menu 910 that allows the direct sales agent 706 to update the status of the sales lead.

Using the communications network of the present invention, once the direct sales agent 706 has sold the services of the satellite broadcast provider to the customer, the direct sales agent can complete the sale at the customer's residence. As indicated in the flow chart of Figure 10, the direct sales agent must first log on to the network and provide his password authorization (step 1002). To log on the network, the user must first have to establish a communications link between at the customer's residence. This may involve using the customer's phone line for modem access between the direct sales agent's palmtop computer and the corporate headquarters 12. The direct sales agent will next request that a customer activation screen be displayed (step 1004). This screen will contain the necessary data fields for activating the customer's account, including the level of service purchased by the customer, the method of payment, and customer's personal data. The web server 32 displays the web page with the customer activation screen, which contains blank data fields that allow the direct sales agent to enter the relevant customer information (step 1006). At step 1008, the direct sales agent enters the customer information, including payment information.* At this time, the direct sales agent may also accept the customer's payment for any up-front and nonrecurring costs or initial services that have been provided, thereby avoiding the complexity of later billing the customer for these services. At step 1010, web server 32 uploads data entered by the direct sales agent into SQL database server 30, after which application server 28 pastes the data to the screen of SNA server 24 (step

1012). SNA server 24 then applies the data to the mainframe database 22. Once the customer's data, including payment information, has been approved, a confirmation number is generated and a confirmation web page is transmitted to the direct sales agent. In this manner, the entire sale, including the acceptance of the customer's personal data and
5 payment, can be accomplished at one time at the customer's residence, avoiding the need to bill the customer separately or have the customer contact the corporate headquarters to complete the transaction.

Thus, using the communications network of the present invention, the user, depending on his access level, is able to communicate among the business nodes of the
10 network in a secure and efficient manner. In this manner, the communications network of the present invention is able to provide the user with dynamically updated web pages that provide information requested by the user. In the same fashion the user is able to supply data over the web site to the mainframe database, thereby permitting the mainframe database to have the most recent information for transmission, when requested, to users of
15 the communications network. Because the communications network of the present invention employs the global Internet for its communications links, a private, virtual network is provided for communication between users of the system.

The present invention is not limited in its application to the communications network of a satellite broadcast provider. The communications network of the present
20 invention is applicable to communications networks in other business settings that in which a secure, low cost communications system is needed to provide dynamic communication between geographically separated business nodes. It should also be understood that various

changes, substitutions, and alterations can be made hereto without departing from the spirit and scope of the invention as defined by the appended claims.

CLAIMS

What is claimed is:

1. A communications network, comprising:
a plurality of geographically separate business nodes, each of the business
5 nodes coupled to the global Internet, each of the business nodes including a digital
computer for providing access to the global Internet;
a web server coupled to the global Internet, the web server programmed to
display a plurality of web sites upon the receipt of a communications request from a
business node of the communications network; and
10 an information database coupled to the web server for providing data to and
receiving data from the web server in response to requests from the web server to allow the
web server to populate data fields of the web sites of the web server with data transmitted
from the information database and to allow the web server to transmit data entered in the
data fields of the web site to the information database.
- 15 2. The communications network of claim 1, further comprising a firewall for
limiting access to the data of the information database.
3. The communications network of claim 2, wherein the business nodes are
hierarchically arranged such that business nodes in higher tiers of the hierarchy have
supervisory responsibility over one or more business nodes in lower tiers of the hierarchy.

4. The communications network of claim 3, wherein the business nodes are master agents and subagents in the sales distribution channel of a satellite broadcast provider.

5. the communications network of claim 3, wherein the business nodes are direct sales agents in the sales distribution channel of a satellite broadcast provider.

6. A communications network for communicating between the business nodes of the sales distribution channel of a satellite broadcast provider, comprising:

a plurality of subagents;

a plurality of master agents, each of the master agents having supervisory

responsibility for one or more subagents;

a corporate headquarters, the corporate headquarters having supervisory responsibility for each of the master agents, wherein each of the subagents, master agents, and corporate headquarters having access to a digital computer for accessing the global Internet, and each of the subagents, master agents, and corporate headquarters comprising

the business nodes of the communications network;

a web server coupled to the global Internet, the web server operating a web site for the communications network and having stored therein templates for producing web pages to be displayed over the global Internet;

a database server coupled to the web server;

an application server coupled to the database server;

a mainframe computer emulator terminal coupled to the application server;
a mainframe database coupled to the emulator terminal;
wherein the web server, upon receiving a request from a business node to
display a web site over the global Internet having certain data therein, instructs the emulator
5 terminal to retrieve certain data from the mainframe database, and wherein the application
server retrieves the data from emulator terminal and stores the data in the database server,
and wherein the web server retrieves the data from the database server to populate the fields
of the web page to be displayed to the requesting business node.

7. The communications network of claim 6, further comprising a firewall for
10 limiting access to the web server.

8. The communications network of claim 6, wherein the application server
retrieves certain data from the emulator terminal by executing a software application that
screen scrapes the data from the emulator terminal.

9. The communications network of claim 6, wherein the web server retrieves
15 data from the application server by executing a software application that dynamically
populates the fields of the web page to be displayed to the requesting business node.

10. A communications network for communicating between the business nodes
of the sales distribution channel of a satellite broadcast provider, comprising:

a plurality of area sales managers;

a plurality of direct sales agents, each of the area sales managers having supervisory responsibility for one or more direct sales agents;

a corporate headquarters, the corporate headquarters having supervisory
5 responsibility for each of the area sales managers, wherein each of the direct sales agents, area sales managers, and corporate headquarters having access to a digital computer for accessing the global Internet, and each of the direct sales agents, area sales managers, and corporate headquarters comprising the business nodes of the communications network;

a web server coupled to the global Internet, the web server operating a web
10 site for the communications network and having stored therein templates for producing web pages to be displayed over the global Internet;

a database server coupled to the web server;

an application server coupled to the database server;

a mainframe computer emulator terminal coupled to the application server;

15 a mainframe database coupled to the emulator terminal;

wherein the web server, upon receiving a request from a business node to display a web site over the global Internet having certain data therein, instructs the emulator terminal to retrieve certain data from the mainframe database, and wherein the application server retrieves the data from emulator terminal and stores the data in the database server,
20 and wherein the web server retrieves the data from the database server to populate the fields of the web page to be displayed to the requesting business node.

11. The communications network of claim 10, further comprising a firewall for limiting access to the web server.

12. The communications network of claim 10, wherein the application server retrieves certain data from the emulator terminal by executing a software application that
5 screen scrapes the data from the emulator terminal.

13. The communications network of claim 10, wherein the web server retrieves data from the application server by executing a software application that dynamically populates the fields of the web page to be displayed to the requesting business node.

14. A method for communicating between users at the business nodes in the
10 sales distribution channel of a satellite broadcast provider, wherein the business nodes comprise users at a corporate headquarters and some combination of users comprising master agents, subagents, area sales managers, retail outlets, and direct sales agents, comprising the steps of:

receiving a data request at a web server from a user who has accessed the
15 web site managed by the web server;

verifying the identification and password information of the user;

initiating a request by a mainframe computer emulation terminal for customer-specific data maintained on a mainframe computer database;

- retrieving the data from the mainframe computer emulation terminal by an application server;
- transmitting the data from the application server to the database server; and
- retrieving the data by the web server from the database server to dynamically
- 5 populate data fields of a web page with the data requested by the user.

15 15. The method of claim 14, wherein the step of retrieving data from the mainframe computer emulation terminal comprises the step of initiating an application program on the application server that screen scrapes the retrieved data from the mainframe computer emulation terminal.

10

16. The method of claim 14, wherein the step of retrieving the data by the web server from the database server comprises the step of initiating an application program to retrieve data from the database server to dynamically populate data fields of a web page with the data requested by the user.

15 17. A method for communicating between users at the business nodes in the sales distribution channel of a satellite broadcast provider, wherein the business nodes comprise users at a corporate headquarters and some combination of users comprising master agents, subagents, area sales managers, retail outlets, and direct sales agents, comprising the steps of:

receiving a data request at a web server from a user who has accessed the
web site managed by the web server;
verifying the identification and password information of the user;
displaying for the user a web page having blank data fields for entry by the
5 user;
receiving at the web server data entered by the user in the web page
displayed to the user;
transmitting the data from the web server to a database server;
removing the data from the database server by an application server;
10 applying the data to a mainframe computer emulation terminal;
transmitting the data from the mainframe computer emulation terminal to
a mainframe computer database.

18. The method of claim 17, wherein the step of applying the data to a
mainframe computer emulation terminal comprises the step of initiating an application
15 program on the application server that applies the data to the mainframe computer
emulation terminal.

19. The method of claim 17, wherein the step of transmitting the data from the
web server to a database server comprises the step of initiating an application program to
transmit the data from the web server to the application server.

20. A method for populating the data fields of dynamically changing web pages with data stored in a legacy mainframe database, comprising the steps of:

receiving data stored on the mainframe database at a mainframe database terminal emulator;

5 screen scraping the data from the mainframe database terminal emulator;

storing the screen scraped data in variables in an intermediate database server; and

retrieving the data from the database server and populating the data fields of a selected web page with the data.

10 21. The method of claim 20, wherein the step of screen scraping the data from the database terminal emulator comprises the step of executing an application program from the intermediate database server that screen scrapes the data from the database terminal emulator.

22. The method of claim 20, wherein the step of retrieving the data from the
15 database server and populating the data fields of a selected web page comprises the step of executing an application program transmit the data from the database server to the web server.

23. A method for applying data to a legacy mainframe database, comprising the steps of:

receiving the data in data fields of a web page;
retrieving the data from the data fields of the web page and storing the data
in a database server;
screen pasting the data to a mainframe database terminal emulator; and
5 transferring the data from the mainframe database terminal emulator to the
legacy mainframe database.

24. The method of claim 23, wherein the step of screen pasting the data from the
database terminal emulator comprises the step of executing an application program from
the intermediate database server that screen pastes the data to the database terminal
10 emulator.

25. The method of claim 23, wherein the step of retrieving the data from the data
fields of the web page and storing the data in a database server comprises the step of
executing an application program transmit the data from the fields of the web page to the
database server.

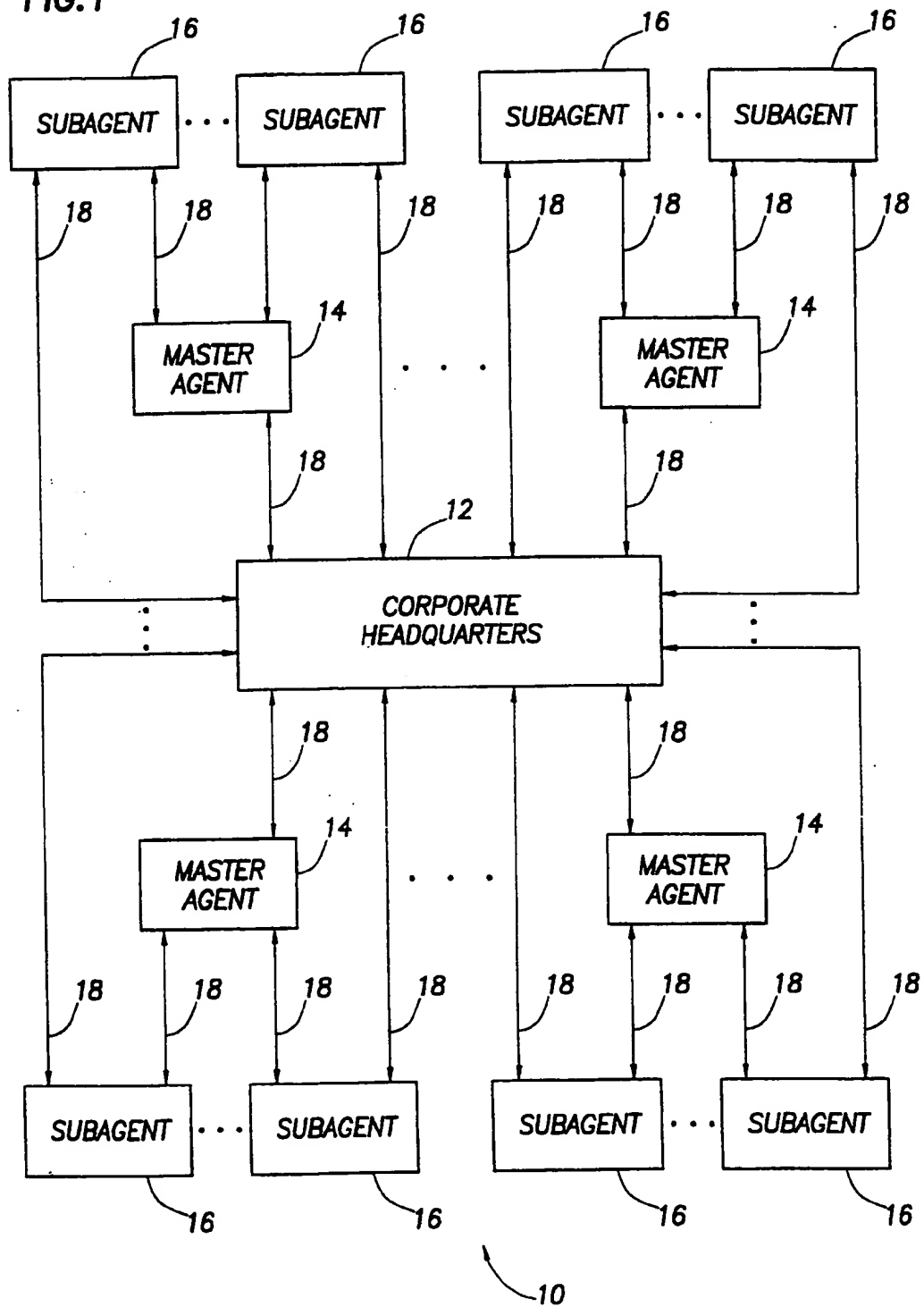
15 26. The communications network of claim 1, wherein at least one of the business
nodes is a master agent.

27. The communications network of claim 1, wherein at least one of the business
nodes is a subagent.

28. The communications network of claim 1, wherein at least one of the business nodes is a retail outlet.

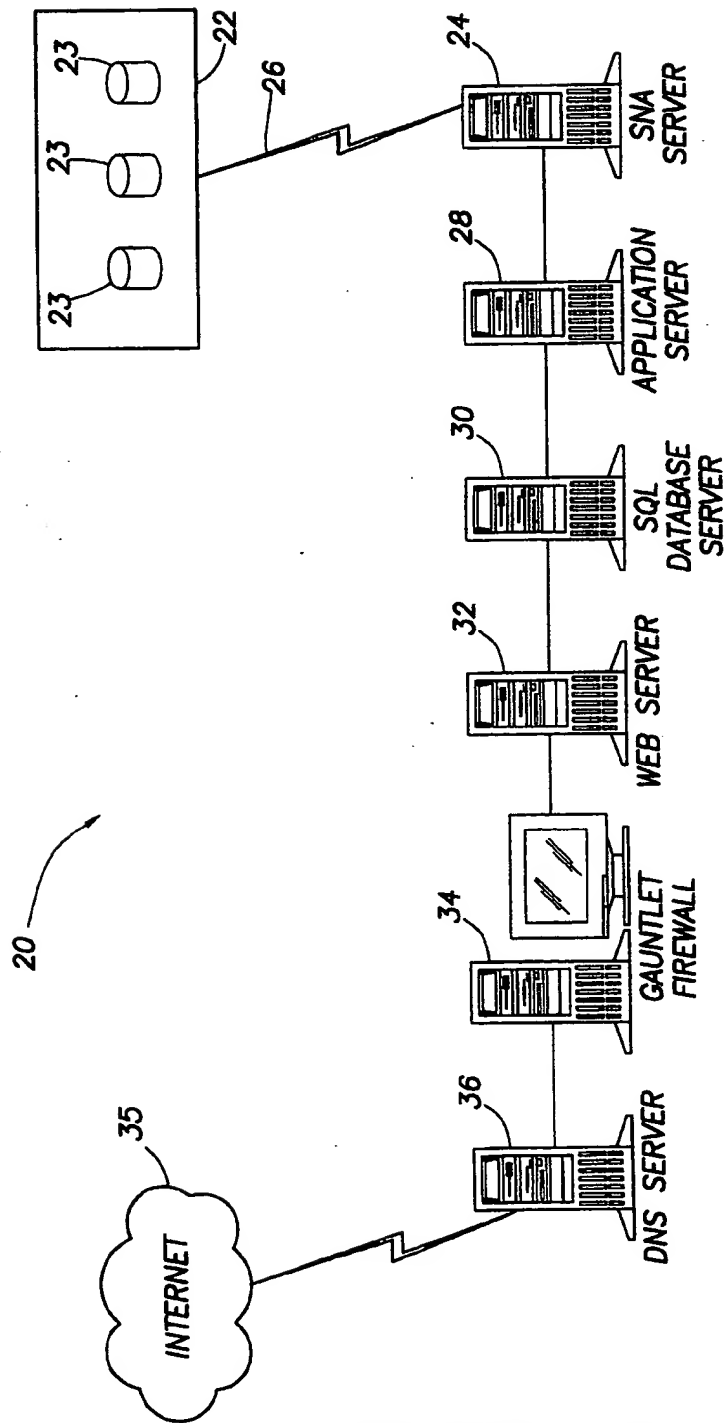
1/13

FIG. 1



2/13

FIG.2



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3/13

FIG. 3

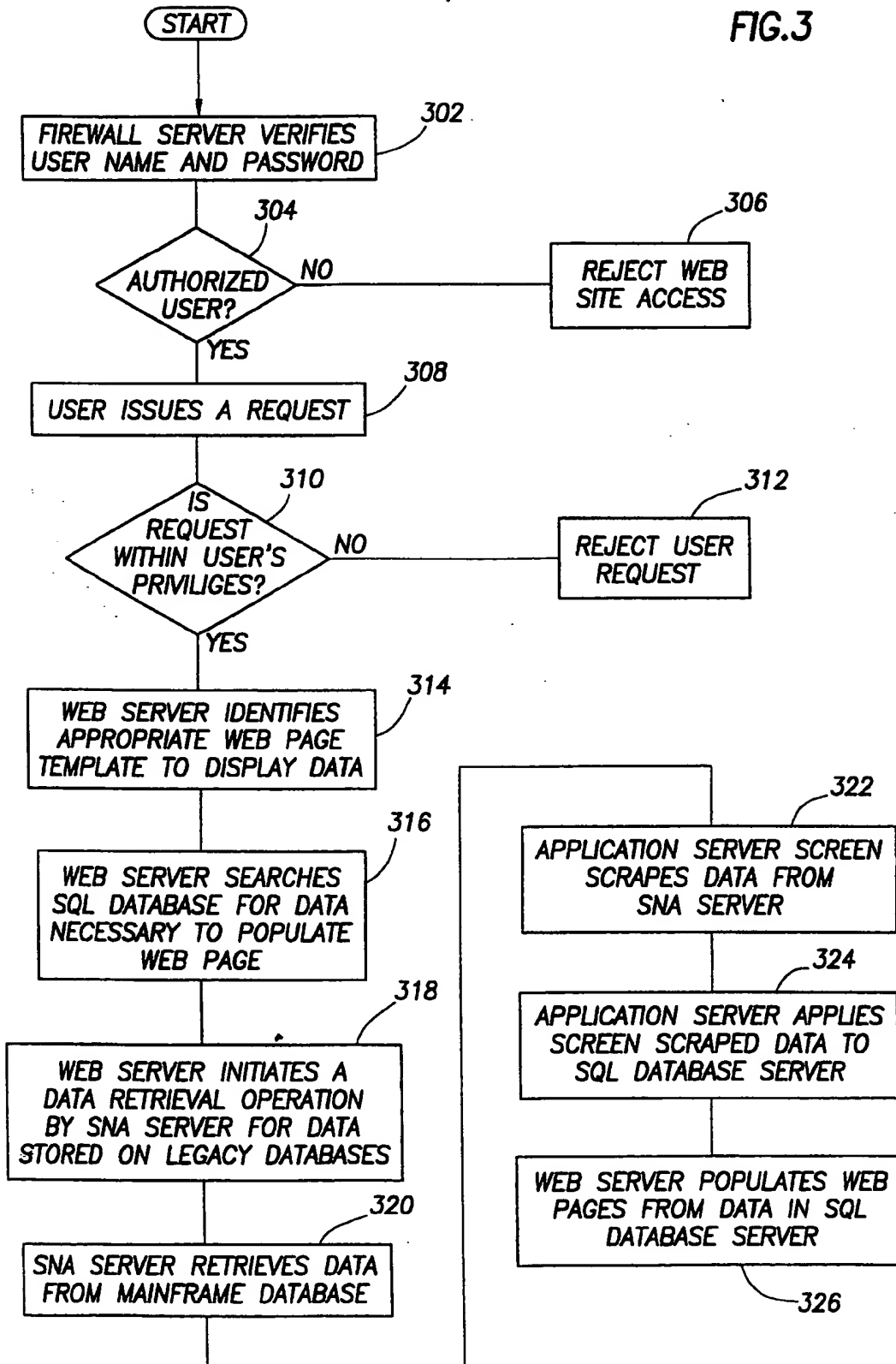


FIG. 4a

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4/13

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General Account Information Retrieved

General Account Information

Account Number 0206992 } **406** Status Information: Sales Rep 1042

Subscriber Name John Smith } **404**

Subscriber Address 12 Elm Street
Anytown, U.S.A.

Home Phone 334 555-2020

Business Phone 334 555-1010

Billing Name

Billing Address

Monthly Account Billing

Last Payment	Delinquent	Cycle 1	Cycle 2	Cycle 3
\$65.92 on 11/01/97	0-.00	8-.00	0-.00	0-.00

Other Account Information

Campaign

408

FIG. 4b

5/13

Billing Information		
Statement Date	Service From	Service To
10/17/97	10/29	11/28
Service/Transaction	Description	Amount
PREVIOUS		69.87
BALANCE		69.87
9/29 PAYMENT		CR
-THANK YOU		33.99
PRIMEENTERTAINMENT		
MONTHLY		10.00
RENTAL FEE		10.99
SHOWTIME		
THE WORKS		0.00
ABC		
THE WORKS		0.00
CBS		
THE WORKS		0.00
FOX		
THE WORKS		6.99
THE WORKS		0.00
NBC		
THE WORKS		0.00
PBS		
8/30 VEGAS		
VACATION		3.95
START 10:00		
P.M.		
**AMOUNT		\$65.92
DUE**		

FIG. 4c

6/13

402

401

Account Notes

110297 CCI BETTY HAS NP. WENT THROUGH ELECTRICAL STORM LAST NIGHT. ALL C
HANNELS SAY 139/139. DID TS STEPS. NOTHING WORKED. SET UPT TC. TO
LD HER TO CALL BACK WHEN PICTURE COMES BACK ON WE WILL GIVE HER C
REDIT FROM 11/2 UNTIL SHE CALLS. CH/23322/7:24A

062097 CORRECTED CODING FOR SHOWTIME CLEAN-UP EKM89322

061897 MACI:ALEX/87020 - NEEDED IRD CHG'D TO IMPULSE AND PHONE TEST SENT
- ALSO CLOSED WORKORDER WITH CODE 991/BLS/80048/331P

061797 AUTOMATIC POSTINGS ADJUSTMENTS FOR SHOWTIME UPGRADE PROMOTION. PO
STED 10.99 CREDIT.

061797 CCI SON MARTY, NO SIGNAL, SQ 1 139/139 ,2 139/139, 85 139/139
, 323 139/139.....WEATHER CLOUDY,CABLES TIGHT,DISH OK,NO RADAR,
.....UNPLUG,NOTHING....SOFT RESET,NO LUCK...KCY 89425 559PM

410

FIG. 4d

Work Order History

Type	Status	Entered	Changed
Trouble Call	Open	11/02/97	11/02/97
Upgrade	Closed	06/20/97	06/20/97
Trouble Call	Closed	06/17/97	06/18/97
Upgrade	Closed	06/16/97	06/16/97
Upgrade	Closed	06/15/97	06/15/97
Upgrade	Closed	06/15/97	06/15/97
Downgrade	Closed	06/02/96	06/02/97
Upgrade	Closed	01/07/96	01/07/96
Upgrade	Closed	12/28/95	12/28/95
Upgrade	Closed	09/04/95	09/04/95
Upgrade	Closed	09/04/95	09/04/95
New Contract	Closed	08/29/95	08/29/95

Converter Information

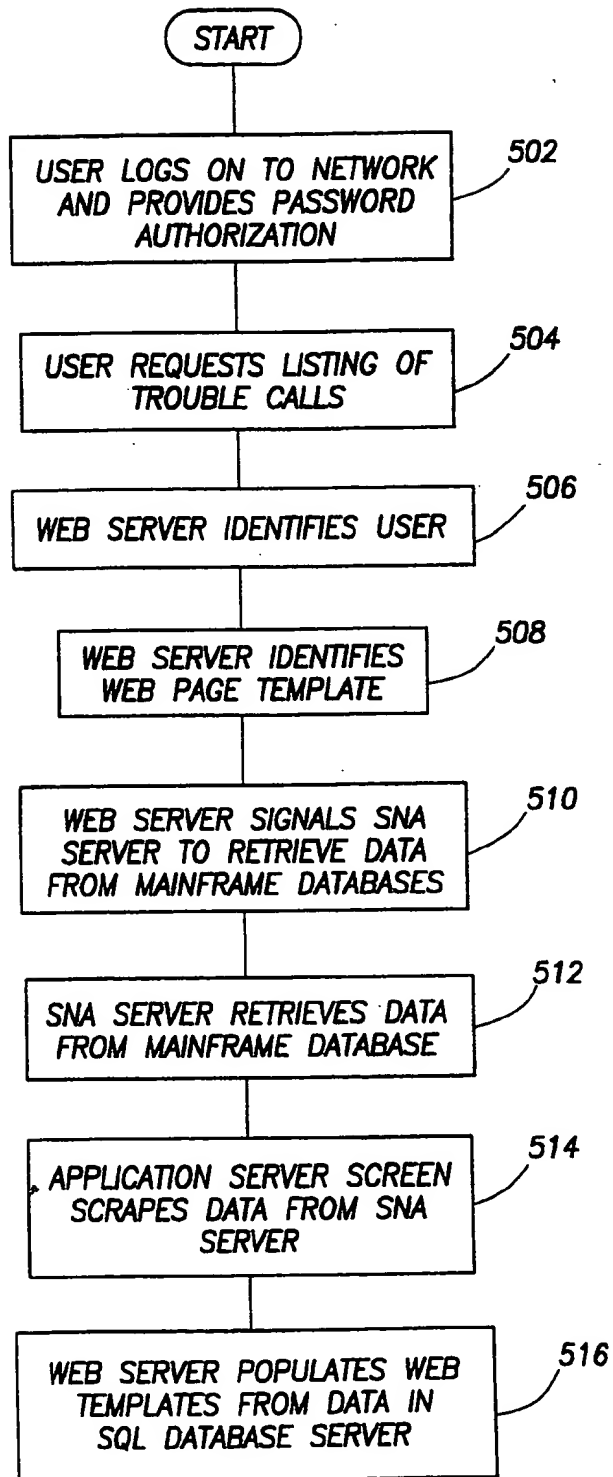
ID	Serial Number	Status
Primary	015264169853	Active

7/13

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8/13

FIG.5



9/13

602

FIG. 6

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Open Service Calls

Service Center

Sales	Cr	Time	Reason	Name	Home Phone No	Account No
1042	Y	11/01/97	No Picture	JAMES, JOHN	334 5554120	0208992
1042	Y	11/02/97	No Picture	SMITH, MARY	909 5552121	0319317
1042	Y	11/02/97	No Picture	THOMPSON, WILL	808 5553282	0269114
1042	Y	11/02/97	No Picture	WILSON, TED	303 5552671	0367111
1042	Y	11/02/97	No Picture	JAMES, SANDRA	713 5550234	0101992
1042	Y	11/02/97	No Picture	WILLIAMS, ANN	219 5557851	0333457
				608	604	

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10/13

FIG. 7

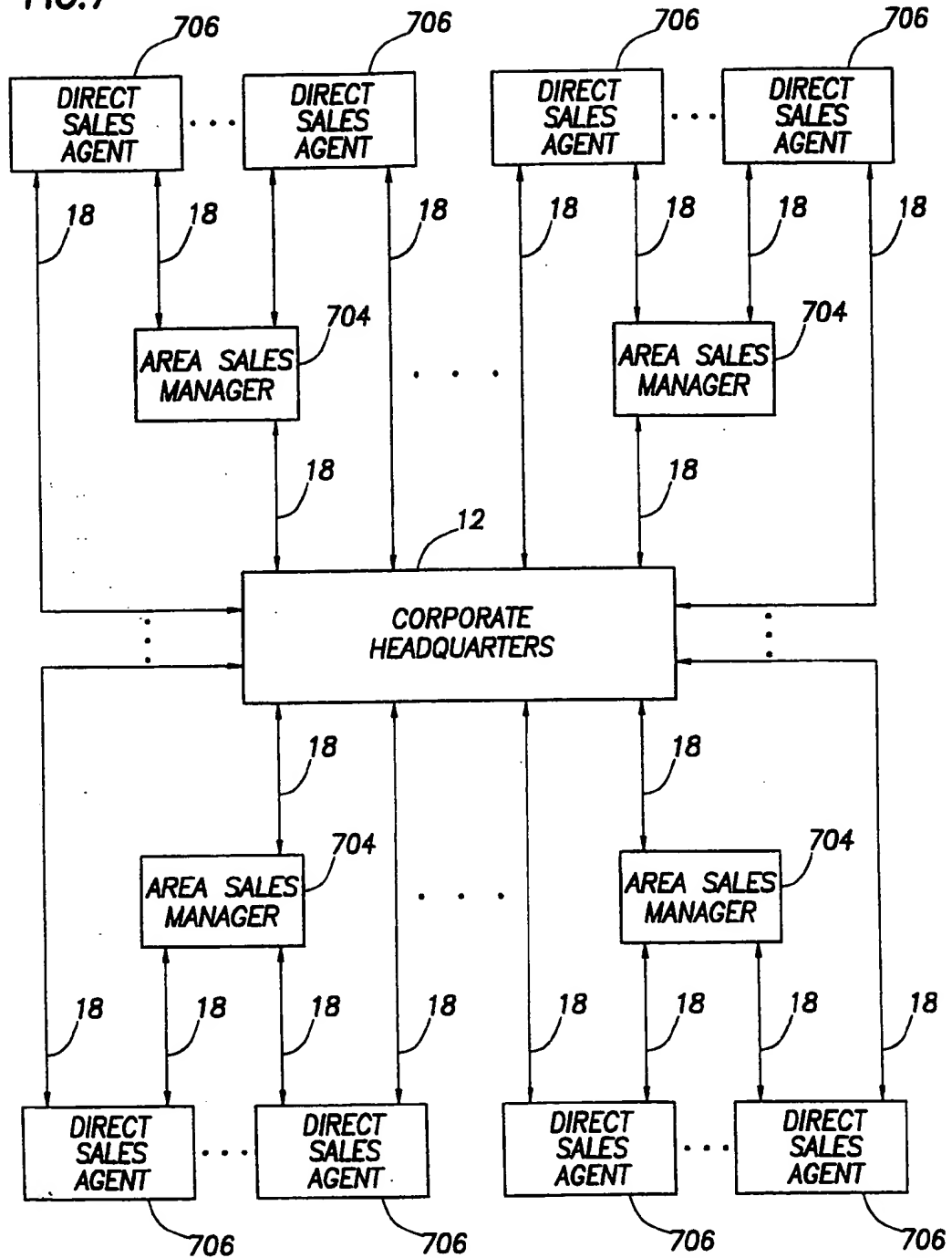


FIG. 8

802

11/13

HOME Sales & Marketing Reports Support & Service Policy and Procedure Help Feedback				
<div style="display: flex; justify-content: space-between;"> <div> Back to LEADS </div> <div> Leads needing sales agents. 806 804 808 810 </div> </div>				
Assign Lead	Days Cold	Name	SALT Disposition	Note
Assign	4	ELDRED RAINES	Call Back	wants 2 lrd purch web chick ok mm/89721
Assign	4	MARILYN MOSS	Credit Pending	
Assign	4	NEIL THOMAS	Sent to Field	
Assign	4	LAURA JONES	Call Back	rents; may buy home later; 2lv
Assign	3	RON ROSS	Credit Pending	
Assign	3	LINDA TERRY	Call Back	
Assign	3	TIM THOMPSON	No Interest	rents...1lv it the sky...not sure etc etc...callbak????
Assign	3	STEPHEN DEAL	Credit Pending	cci lease and purchase; rents; 89191 aa 12:28
Assign	3	WILLIAM SIMPSON	Call Back	
Assign	3	MELBA	Call Back	
Assign	3	BETH KINER	Call Back	
Assign	3	DIANE	Call Back	
Assign	3	JIM MOORE	Call Back	
Assign	3	MARY WILLIAMS	Call Back	cci mary for info-told her 224 install for 2 tv's and 30.98 for vp on purchase-she may chall back-mai
Assign	3	LISA LOPEZ	Sent to Field	
Assign	3	TANYA SMITH	No Interest	
Assign	3	JOHN WALSH	Credit Pending	ORDERED SYTEM THRU SECRETARY.HAD CUST ON PHONE/3-WAY DURING C R CHECK OK TO L

FIG. 9

12/13
902

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Back to
LEADS

904

Lead Available Date	11/3/97 9:08 AM	Days Old	1
Lead Hot Date	11/1/97 9:24 AM	Days Cold	3

906

TV
English
71982698263

Name: EARL FISHER
Address: 44 ELM STREET

City: ANYTOWN
State: CO
Zip: 81200

Credit Check:

Campaign:
Language:

Home Phone: 303 5550121
Contact Phone:

908

Current SUI's Disposition:	Call Back
Last Action:	Call Back
New Action:	Call Back

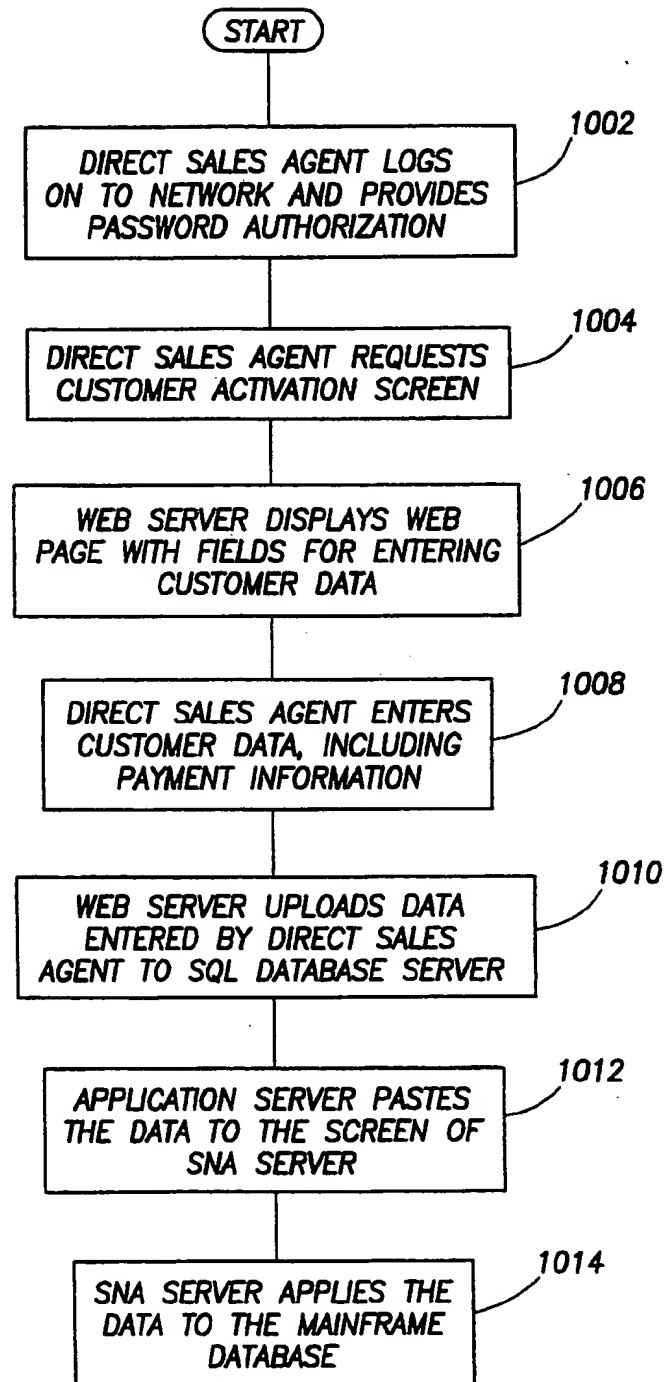
910

Submit

Clear

13/13

FIG. 10



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US98/25242

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :G06F 11/00

US CL : 705/26; 395/200.03

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/26, 1, 10, 37; 395/200.03, 380/4

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,623,601 A (VU) 22 April 1997, col. 4 - col. 12.	1-28
Y	US 5,572,643 A (JUDSON) 05 November 1996, col. 4 - col. 7.	1-28
A	US 5,604,803 A (AZIZ) 18 February 1997, entire document.	1-28

☐

Further documents are listed in the continuation of Box C.

☐

See patent family annex.

*

Special categories of cited documents:

T

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

A

document defining the general state of the art which is not considered to be of particular relevance

X

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

B

earlier document published on or after the international filing date

Y

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

L

document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O

document referring to an oral disclosure, use, exhibition or other means

A

document member of the same patent family

P

document published prior to the international filing date but later than the priority date claimed

Date of the actual completion of the international search

14 JANUARY 1999

Date of mailing of the international search report

29 MAR 1999

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